

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 25 JAN 2006

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Applicant's or agent's file reference 100 809 a/se	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/11820	International filing date (day/month/year) 24.10.2003	Priority date (day/month/year) 19.08.2003
International Patent Classification (IPC) or both national classification and IPC H04L12/56		
Applicant DOCOMO COMMUNICATIONS LABORATORIES EUROPE GMBH et		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 26 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 14.03.2005	Date of completion of this report 24.01.2006
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Jimenez Hernandez, P Telephone No. +49 89 2399-7938 

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International application No. PCT/EP 03/11820

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-9, 15-68 as originally filed
10-14, 14a received on 19.09.2005 with letter of 19.09.2005

Claims, Numbers

1-63 received on 19.09.2005 with letter of 19.09.2005

Drawings, Sheets

1/12-12/12 received on 26.03.2004 with letter of 26.03.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☒ the claims, Nos.: 64-68
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-63
	No: Claims	
Inventive step (IS)	Yes: Claims	1-63
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-63
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: BAKRE A V ET AL: "IMPLEMENTATION AND PERFORMANCE EVALUATION OF INDIRECT TCP" IEEE TRANSACTIONS ON COMPUTERS, IEEE INC. NEW YORK, US, vol. 46, no. 3, 1 March 1997 (1997-03-01), pages 260-278, XP000685987 ISSN: 0018-9340

D2: US 2002/036991 A1 (INOUE ATSUSHI) 28 March 2002 (2002-03-28)

D3: PATENT ABSTRACTS OF JAPAN vol. 2002, no. 11, 6 November 2002 (2002-11-06) & JP 2002 209028 A (MITSUBISHI ELECTRIC CORP), 26 July 2002 (2002-07-26)

D4: EP-A-0 903 905 (TOKYO SHIBAURA ELECTRIC CO) 24 March 1999 (1999-03-24)

D5: US 2002/045424 A1 (LEE HEE DONG) 18 April 2002 (2002-04-18)

2. The subject-matter of claim 1 meets the requirements of novelty and inventive step (Art. 33(1)-(3) PCT):

- 2.1 **D1**, belonging to the same field of internetworking in heterogeneous network environments as the application, is considered the closest prior art.

D1 discloses, in the terminology of claim 1, a gateway for forwarding transmission information between a first terminal node of a first network and a second terminal node of a *[second wireless]* network, comprising a transmission/reception unit adapted to receive transmission information from said first terminal node and to transmit said transmission information to said second terminal node and an acknowledgment information detection unit adapted to detect the receipt of acknowledgment information from said second terminal node. (*)

(*) TCP connections (e.g. indirect-TCP connections in D1) imply receiving

acknowledgement information at the end devices and at the intermediate gateway device, since TCP is a connection-oriented transport protocol.

- 2.2 Claim 1 differs from **D1** in that the second wireless network is an *ad-hoc* network and in that the gateway comprises tunnel setup means arranged to establish a tunnel between the gateway and the mobile node within the ad hoc network in order to exchange acknowledgement information (claim 1, step c). Said acknowledgement information within said ad hoc network is arranged to be provided to the gateway in order to identify safe receipt of transmission information.
- 2.3 The objective problem starting from **D1** is how to perform flow control more reliably and efficiently in the case where gatewaying to an ad-hoc network is involved, so that handling of different addressing schemes is supported. This problem is solved by the invention as claimed in claim 1.
- 2.4 Although **D1** teaches the implementation of an indirect transport protocol via an intermediate gateway device in order to attain improved transmission performance, the transmission problems in ad hoc network environments and the establishment of a tunnel between different elements are neither disclosed nor suggested in **D1**. Furthermore, none of the remaining documents cited in the Search Report (**D2-D5**) disclose or suggest the a.m. distinguishing features in relation to the collection of accurate control information in an ad-hoc network. Therefore, an inventive step must be acknowledged to the subject-matter of claim 1.
3. The subject-matter of independent claims 29, 35, 36, 62 and 63 meets the requirements of Art. 33(1)-(3) PCT:
- These claims are corresponding since they are related to the operation of the gateway on the one hand (claim 35) and to the operation of a terminal according to the invention on the other hand (claim 36), as well as to the corresponding terminal device (claim 29) and gateway and terminal software (claims 62 and 63). Thus, lack of unity is not jeopardized and the reasoning in the previous point also applies to the subject-matter of these claims.
4. The dependent claims further limit the independent claims and likewise meet the

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requirements of Art. 33(1)- (3) PCT.